

REMARKS

Claims 1-22 are currently pending in the application, as amended. Claims 5-22 have been withdrawn as being drawn to the non-elected species. Claim 1 has been amended to correct its form and grammar and to clarify that the total efficiency of the speed reducer is 77% or more. Support for the amendment to claim 1 can be found in at least paragraphs [0072] and [0074]. Claim 4 has been amended to delete the phrase “engaged with a ring gear of a tower”. Accordingly, no new matter has been added.

Objections to the Drawings

The Examiner has objected to the drawings for failing to show every claimed feature. Specifically, the Examiner asserts that the “ring gear of a tower” in claim 4 is not shown. Claim 4 has been amended to remove this feature. Accordingly, Applicant respectfully requests that the objection to the drawings be reconsidered and withdrawn.

Claim Rejections – 35 U.S.C. § 103

The Examiner has rejected claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0054912 A1 (Nohara). The Examiner asserts that Nohara discloses every element of claims 1-4 except for the specific gear ratio. Applicants respectfully traverse this rejection.

Section 2143.03 of the MPEP requires the “consideration” of every claim feature in an obviousness determination. To render a claim unpatentable, however, the Office must do more than merely “consider” each and every feature for this claim. Instead, the asserted combination of the patents must also teach or suggest *each and every claim feature*. See *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974) (emphasis added) (to establish *prima facie* obviousness of a claimed invention, all the claim features must be taught or suggested by the prior art). A proper obviousness determination requires that an Examiner make “a searching comparison of the claimed invention – *including all its limitations* – with the teaching of the prior art.” See *In re Wada and Murphy*, Appeal 2007-3733, citing *In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995) (emphasis in original). Moreover, as the Supreme Court recently stated, “*there must be some articulated reasoning with some rational underpinning to support the legal conclusion of*

obviousness.” *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (emphasis added)).

Claim 1 is directed to a speed reducer used in a yaw drive apparatus of a wind power generation apparatus, and recites:

a first stage speed reducing portion;
a second stage speed reducing portion connected to the first speed reducing portion, a total reduction gear ratio of the first stage speed reducing portion and the second stage speed reducing portion is set to 1/6 to 1/60;
a third stage speed reducing portion, the third stage speed reducing portion is constructed by an eccentric oscillating type speed reduction mechanism comprising an internal gear member in which a number of internal teeth are formed at the internal periphery thereof, a plurality of external gears which are received in the internal gear member, which have external teeth engaged with the internal teeth and having a number of teeth less than the number of the internal teeth at the external periphery thereof, and which are disposed in parallel to each other in the axial direction, a plurality of crank shafts which are rotatably inserted into the plurality of external gears, and which are connected to the second stage speed reducer and rotate to eccentrically rotate the plurality of external gears, and a carrier which rotatably supports both ends of the crank shafts, and
a reduction gear ratio of the eccentric oscillating-type speed reduction mechanism is set to 1/50 to 1/140, and wherein the total reduction gear ratio of the speed reducer is set to 1/1000 to 1/3000 such that a total efficiency of the speed reducer is 77% or more.
[Underlining emphasis added]

Applicants respectfully submit that Nohara fails to teach, disclose or suggest each and every element of amended claim 1. Specifically, Nohara does not disclose a three stage speed reducer where the total reduction gear ratio of the first stage speed reducing portion and the second stage speed reducing portion is set to 1/6 to 1/60, a reduction gear ratio of the eccentric oscillating-type speed reduction mechanism is set to 1/50 to 1/140, and wherein the total reduction gear ratio of the speed reducer is set to 1/1000 to 1/3000 such that a total efficiency of the speed reducer is 77% or more. As set forth in the Background section in the present application, conventional speed reducers for use in the yaw drive apparatus of a windmill power

generation apparatus use a five-stage speed reduction mechanism for obtaining the high gear reduction ratio. Such speed reducers can achieve a total efficiency of 77%. However, the Applicants have discovered five-stage speed reducers used in wind power generation apparatuses are not ideal due to their long length and large capacity. Additionally, when the five-stage speed reducer is used in a low temperature environment, the stirring resistance of the lubricant becomes large due to the five-stages requiring a larger motor. (See paragraph [0009]). Three-stage speed reducers have not previously been used in yaw drive apparatuses for wind power generation because the specific gear ratios in a three-stage speed reducer is not straightforward or easily obtained. The reduction ratios and efficiency recited in claim 1 derive from unexpected results. Nohara happens to disclose a three-stage speed reducer but does not disclose the high gear reduction ratios required for use in a yaw drive apparatus for wind power generation to achieve at least a 77% efficiency because Nohara is not used in a wind power generation device. The speed reducer in Nohara would not provide insight to one of skill in the art to use the three-stage speed reducer having a specific gear ratio and efficiency.

The Examiner asserts that it would have been obvious to modify the device in Nohara to employ the specific gear reductions. "The admonition that 'obvious to try' is not the standard under § 103 has been directed mainly at two kinds of error. In some cases, what would have been 'obvious to try' would have been to vary all parameters or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful.... In others, what was 'obvious to try' was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988) (*see also* M.P.E.P 2145). There is no indication in Nohara which parameters could be modified to improve upon five-stage speed reducers used for a yaw apparatus of a windmill power generation apparatus. Though Nohara happens to teach a three-stage speed reducer there is no suggestion that such a speed reducer would be useful. One of ordinary skill in the art would not be inclined to select a three-stage speed reducer based on Nohara over a four or two-stage speed reducer for example. Even if one of ordinary skill in the art happened to select the device in Nohara as a base model, there is nearly an infinite number of gear combinations possible in the prior art due to the many

adjustable parameters. Nohara provides no guidance on what stage should be modified and what each reduction ratio should be. Accordingly, one of ordinary skill in the art is not guided as to whether to alter the number of reduction stages or how to select the appropriate gear ratios based on Nohara. Nohara is totally silent as the gear ratios and, as such, does not teach a particular set for a particular application. Accordingly, Nohara fails to disclose each and every element of claim 1 of the present application and the specific gear ratios of claim 1 would not be obvious.

Claims 2-4 depend upon claim 1 and are patentable over the cited references for at least the same reasons as discussed above and further due to the additional features that they recite. Based upon the above, Applicants respectfully request that the Examiner reconsider and withdraw any rejection of claims 1-4.

CONCLUSION

In view of the foregoing Amendment and remarks, Applicants respectfully submit that the present application, including claims 1-4, as amended, is in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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